XIX. *An Account of ſome Thermometrical Obſervations, made by Sir* Robert Barker, *F. R. S. at* Allahabad *in the* Eaſt Indies, *in Lat.* 25° 30′ *N. during the Year* 1767, *and alſo during a Voyage from* Madras *to* England, *in the Year* 1774. *Extracted from the original Journal by the Hon.* Henry Cavendiſh, *F. R. S.*

Redde, April 6, 1775. THE greateſt part of the obſervations at Allahabad were made within doors; ſeveral were made within a tent placed under the ſhade of trees, ſome in the open air in the Sun, and ſome in the open air in the ſhade; but there is no regular ſeries of obſervations in any one place; nor were they made at ſtated times of the day. Though a thermometer kept within doors is but a very indifferent meaſure of the heat of any climate; yet as I have not ſeen any thermometrical obſervations made in that country, except a few during the heats of the ſummer, and printed in the Philoſophical Tranſactions, vol. LVII. page 218. I have ſet down the great and leaſt heights I meet with in each month.

January

	Leaſt.	Greateſt.		Leaſt.	Greateſt.
January	58	72	July	81	90
February	60	84	Auguſt	80	86
March	62	94	September	78	83
April	79	96	October	72	87
May	72	101	November	52	86
June	81	99	December	51	64

From the 3d of May to the 4th of June incluſive, a thermometer placed within a tent, under the ſhade of trees, was almoſt every day above 100°, and ſeveral times above 109°, once at 112°. The trees under which the tent was placed formed, as I have been informed, a very thick ſhade; ſo that I think theſe heights are more likely to fall ſhort of the true heat of the open air at that time, than to exceed it. The leaſt height I meet with of the thermometer in the open air in the ſhade, is 42°; which it was at twice in the month of January, at 7 A.M. The greateſt heat is on June 9th, at noon, when it was at 114°, the ſky cloudy; the thermometer within doors at the ſame time 95°, which is leſs than it had frequently been in the month of May; ſo that it ſeems likely, that the heat in the open air in May had frequently been above 114°. During the voyage to England, the thermometer was placed in the round-houſe, and was obſerved regularly at eight in the morning, at noon, and at three in the afternoon; the winds and weather are alſo ſet down. The round-houſe,

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I have been informed, is one of the uppermoſt row of cabbins, and is reckoned the cooleſt and moſt airy part of the ſhip. From February 13. to April 7. between Madras and the Southern tropic, the thermometer was conſtantly between 77° and 86°, and very ſeldom lower than 80°. From thence to April 23, lat. 34° 12′, about 15° E. of the Cape of Good Hope, between 70° and 80°. From thence to May 20, at St. Helena, between 62° and 72°. Thence to Auguſt 2. in lat. 43° 14′ N. between 71° and 80°; and from thence to Auguſt 15, in the Britiſh Channel, between 62° and 70°. At land it is well known, that the heat is uſually conſiderably greater in the middle of the day than in the morning or night; but it appears from theſe obſervations, that in the open ſea, there is ſcarce any ſenſible difference; for in ſettled weather, the difference between the different times of the day was rarely more than 1°, oftener none at all. In unſettled weather there was frequently a difference of 2°, ſometimes 4°, ſcarce ever more; but then there ſeems no connexion between this difference and the time of the day, it being as often colder in the middle of the day than in the morning or evening, as warmer. There is added a regiſter of the thermometer, in the ſoldiers barracks at Allahabad, on June 8, 1769, when from 10 in the morning to 8 in the afternoon it ſtood conſtantly above 100°, in the hotteſt part of the day at 107°, and during the whole night between 99° and 98°.

Sir Robert Barker, at my requeſt, has been ſo good as to add the following account of the general ſtate of the weather in Bengal.

THE rains at Bengal generally ſet in between the 1ſt and 15th of June, and continue till the middle of October, when it remains fair till February, the wind blowing moſtly from the N.E. quarter, in which month and March it is interrupted by the N.W. ſqualls, attended with violent guſts of wind, thunder, and lightning, with ſhort, but exceſſive hard, ſhowers of rain or hail, commonly one, but rarely two, in each day. From the middle of March to the middle of June the weather is very hot. At Allahabad and the upper country the rains are not expected till the 20th of June, and ſeldom exceed the 30th, excepting in extraordinary ſeaſons, when it has been known to keep off till the 5th of July; but ſuch an event is uſually attended with a great mortality both of men and beaſts. They break up about the middle of September, and from this time to the beginning of January it continues fair cold weather. In January there are, almoſt always, a few days rain, ſeldom more than a week, and that gentle and pleaſant, which is productive of a ſecond crop, which they uſually reap. The winds at Allahabad ſet in Eaſterly from the beginning of the rains, and blow almoſt conſtantly from that quarter until the concluſion of the cold weather in March, when it changes more Northerly, and is attended by violent North-weſt ſqualls of thunder, lightning, rain, and hail, at which time it changes to the Weſt, blowing with violence, and a heat which frequently deſtroys the birds and beaſts in the fields, till the rains afford a relief.

lief. The river Ganges begins to ſwell before the commencement of the rains, reported by the natives to proceed from the melting of the ſnow on the Northern mountains during the heats of May and June. But the ſudden riſe of the waters in the Ganges, a few days after the ſetting in of the rains, is almoſt incredible; ſince it has been known to riſe twenty feet in forty-eight hours; and its ſudden fall is as extraordinary. In Bengal the rivers are of courſe affected by the riſe and fall of the Ganges. Floods continue the whole time of the rains, more or leſs; but the greateſt overflowings are generally at the beginning and the end or the breaking up of the rains, at which period it rains with the greateſt violence. The waters at Allahabad and in all the upper countries run off into the rivers as ſoon as the rain has ceaſed, the ſoil being for the moſt part of ſand, and the country interſected with ſmall rivulets; but in Bengal, and particularly ſo low down as Calcutta, being of a clay ſoil and an extenſive flat, the whole country is overflowed, forming lakes of great extent, ſome of them being ſix miles over. The water, therefore, generally remains till the Sun has exhaled it, by which it becomes putrid, and renders thoſe parts extremely unwholeſome, occaſioning thoſe deadly putrid fevers, which carries off the patient in a few hours, known by the name of *pucker fevers*.